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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,674	03/24/2004	Takahiro Ishikawa	789_126	4305

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SYRACUSE, NY 13261-7068

EXAMINER

NGUYEN, HUNG THANH

ART UNIT	PAPER NUMBER
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2841

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/807,674

Applicant(s)

ISHIKAWA ET AL.

Examiner

HUNG T. NGUYEN

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/21/06</u> . | 6) <input type="checkbox"/> Other: _____  |

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-11 rejected under 35 U.S.C. 103(a) as being unpatentable over Dubois et al. (US 4,583,283) in view of Okikawa (5,844,310) and Asakura et al (6,451,449) and Ishikawa et al. (US 2002/0138973)

**Regard claim 8:** Dubois et al. discloses in figure 2, a heat spreader module constructed by supplying active hard brazing materials (16, 18, 23-26) each containing an active element (all elements are active and function), between a pedestal (19), a heat spreader member (17). An insulating board (23), and a metal plate (24), and pressing and heating said pedestal (it appears layers are being pressed and heated), said heat spreader member (17), said insulating board (23), and said metal plate (24) to melt said active hard brazing materials (16, 18, 23-26), thereby joining said pedestal, said heat spreader member (17), said insulating board (23), and said metal plate (24) together.

Dubois et al. does not disclose the active hard brazing materials have a thickness ranging from 3 to 20  $\mu\text{m}$  and active hard brazing materials contained an amount ranging from 400-1000  $\mu\text{g}/\text{cm}^2$  and said heat spreader member having a thermal conductivity of 150 W/mK or greater.

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Okikawa and Asakura et al disclose the active hard brazing materials have a thickness ranging from 3 to 20  $\mu\text{m}$  and active hard brazing materials contained an amount ranging from 400-1000  $\mu\text{g}/\text{cm}^2$  (see table on columns 14-16 of Okikawa and 3-5 of Asakura).

Ishikawa et al. discloses heat spreader member having a thermal conductivity of 150 W/mK or greater (see column 10, lines 52-67).

Dubois, Asakura, Ishikawa et al and Okikawa are analogous art because they are from the same field of endeavor to make heat spreader devices.

Therefore, it would have been obvious for one ordinary skill in the art at the time of the invention to make devices of Dubois within the range from 400-1000  $\mu\text{g}/\text{cm}^2$  and having thermal conductivity of 150 W/mK as taught by Asakura, Ishikawa et al. and Okikawa for reducing heat from devices.

**Regard claim 10:** Dubois et al. disclose in figure 1, a heat spreader module constructed by supplying active hard brazing materials each containing an active element (explain in claim 8), between a pedestal (explain in claim 1), a heat spreader member (explain in claim 1), an insulating board (explain in claim 1), and a metal plate (explain in claim 1) and pressing (explain in claim 1) and heating (explain in claim 1) said pedestal (explain in claim 1), said heat spreader member (explain in claim 1) said insulating board (explain in claim 1) and said metal plate (explain in claim 1) to melt said active hard brazing materials (explain in claim 1), thereby joining said pedestal, said heat spreader member (explain in claim 1) said insulating board (explain in claim 1), and said metal plate (explain in claim 1) together.

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Dubois does not disclose the metal plate including a marginal edge of alloy having a width within a range of 200  $\mu\text{m}$  where in said heat spreader member has a thermal conductivity of 150 W/mK or greater.

Okikawa and Asakura et al disclose the active hard brazing materials have a thickness ranging of 200  $\mu\text{m}$  (see tables on columns 14-16 of Okikawa and 3-5 of Asakura).

Ishikawa et al. discloses heat spreader member having a thermal conductivity of 150 W/mK or greater (see column 10, lines 52-67).

Dubois, Asakura, Ishikawa et al and Okikawa are analogous art because they are from the same field of endeavor to make heat spreader devices.

Therefore, it would have been obvious for one ordinary skill in the art at the time of the invention to make devices of Dubois within the range 200  $\mu\text{m}$  and having thermal conductivity of 150 W/mK as taught by Asakura, Ishikawa et al. and Okikawa for reducing heat from devices.

**Regard claim 9, 11:** Dubois et al. discloses in figure 2, a heat spreader module wherein said metal plate has an alloyed region (it appears plate has an alloy and constituent with brazing, see figure 2) including constituent elements of said active hard brazing materials.

### ***Response to Arguments***

Applicant's arguments with respect to claims 8-11 have been considered but are moot in view of the new ground(s) of rejection.

### **Relevant Art**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Yamamoto et al. (US 6,316,826) teaches the thermal conductivity, Tung et al. (US 6,475,327) teaches the heat dissipation property, Houghton et al. (US 6,282,095) teaches method of controlling heat, Sreeram et al. (US 2002/0175403) teaches thermal interface for electronic.

### **Conclusion**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG T. NGUYEN whose telephone number is 571-272-5983. The examiner can normally be reached on 8:00AM-5:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, REICHARD DEAN can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HUNG NGUYEN

9/29/06

HN

  
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SUPERVISORY PATENT EXAMINER  
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10/2/06